

=> d his full

(FILE 'HOME' ENTERED AT 11:51:40 ON 28 JAN 1999)

L1 FILE 'CAPLUS' ENTERED AT 11:51:44 ON 28 JAN 1999
69 SEA ELECTRODE# (2A) COMPLEMENT?

L2 FILE 'STNGUIDE' ENTERED AT 11:52:23 ON 28 JAN 1999
0 SEA NANOEELECTRODE#

L3 0 SEA NANOEELECTRODE#

FILE 'CAPLUS' ENTERED AT 11:54:16 ON 28 JAN 1999

L4 FILE 'CAPLUS' ENTERED AT 11:54:19 ON 28 JAN 1999
25 SEA NANOEELECTRODE#

L5 FILE 'STNGUIDE' ENTERED AT 11:55:10 ON 28 JAN 1999
0 S ELECTRODE# (2A) (SURFACE#)

L6 FILE 'CAPLUS' ENTERED AT 11:57:19 ON 28 JAN 1999
21006 SEA ELECTRODE# (2A) (SURFACE# OR BIND? OR COMPLEMENT?)

L7 535 SEA L6 AND (DNA OR RNA OR NUCLEIC OR PROTEIN#)

FILE 'STNGUIDE' ENTERED AT 11:58:38 ON 28 JAN 1999

FILE 'CAPLUS' ENTERED AT 12:02:05 ON 28 JAN 1999

FILE 'STNGUIDE' ENTERED AT 12:02:08 ON 28 JAN 1999

FILE 'CAPLUS' ENTERED AT 12:05:46 ON 28 JAN 1999

FILE 'STNGUIDE' ENTERED AT 12:05:47 ON 28 JAN 1999

FILE 'CAPLUS' ENTERED AT 12:05:55 ON 28 JAN 1999

L8 FILE 'STNGUIDE' ENTERED AT 12:05:58 ON 28 JAN 1999
0 SEA NANOSENSOR#

L9 FILE 'CAPLUS' ENTERED AT 12:07:40 ON 28 JAN 1999
19 SEA NANOSENSOR#

FILE 'STNGUIDE' ENTERED AT 12:07:54 ON 28 JAN 1999

FILE 'CAPLUS' ENTERED AT 12:10:18 ON 28 JAN 1999

FILE 'STNGUIDE' ENTERED AT 12:10:23 ON 28 JAN 1999

FILE 'CAPLUS' ENTERED AT 12:10:41 ON 28 JAN 1999

FILE 'STNGUIDE' ENTERED AT 12:10:42 ON 28 JAN 1999

FILE 'CAPLUS' ENTERED AT 12:11:26 ON 28 JAN 1999

L10 FILE 'STNGUIDE' ENTERED AT 12:11:26 ON 28 JAN 1999
0 SEA MOECUL? RECOGNIT?

FILE 'CAPLUS' ENTERED AT 12:13:03 ON 28 JAN 1999

L11 2993 SEA MOLECUL? RECOGNIT?
L12 314 S L11 AND (SENS? OR ELECTRODE# OR BIOSENS? OR MICROELECTRODE#)

FILE 'STNGUIDE' ENTERED AT 12:15:00 ON 28 JAN 1999

FILE 'CAPLUS' ENTERED AT 12:18:24 ON 28 JAN 1999

FILE 'STNGUIDE' ENTERED AT 12:18:30 ON 28 JAN 1999

FILE 'CAPLUS' ENTERED AT 12:21:45 ON 28 JAN 1999

FILE 'STNGUIDE' ENTERED AT 12:21:45 ON 28 JAN 1999

=> d his full

(FILE 'HOME' ENTERED AT 09:05:07 ON 28 JAN 1999)

L1 FILE 'CAPLUS' ENTERED AT 09:05:13 ON 28 JAN 1999
8112 SEA ELECTRODE# (2A) (SHAPE# OR STRUCTURE# OR CONFORM? OR
COMPLEMENT? OR BIND?)

FILE 'STNGUIDE' ENTERED AT 09:06:55 ON 28 JAN 1999

FILE 'CAPLUS' ENTERED AT 09:07:48 ON 28 JAN 1999

FILE 'STNGUIDE' ENTERED AT 09:07:49 ON 28 JAN 1999

FILE 'CAPLUS' ENTERED AT 09:07:55 ON 28 JAN 1999

FILE 'STNGUIDE' ENTERED AT 09:07:56 ON 28 JAN 1999

FILE 'CAPLUS' ENTERED AT 09:08:01 ON 28 JAN 1999

FILE 'STNGUIDE' ENTERED AT 09:08:02 ON 28 JAN 1999

FILE 'CAPLUS' ENTERED AT 09:08:07 ON 28 JAN 1999

L2 FILE 'STNGUIDE' ENTERED AT 09:08:07 ON 28 JAN 1999
0 SEA L1 AND (MOLECULE# OR PROTEIN# OR DNA OR RNA OR NUCLEIC)

L3 FILE 'CAPLUS' ENTERED AT 09:08:46 ON 28 JAN 1999
138 SEA L1 AND (MOLECULE# OR PROTEIN# OR DNA OR RNA OR NUCLEIC)

FILE 'STNGUIDE' ENTERED AT 09:09:43 ON 28 JAN 1999

FILE 'CAPLUS' ENTERED AT 09:11:06 ON 28 JAN 1999

FILE 'STNGUIDE' ENTERED AT 09:11:10 ON 28 JAN 1999

FILE 'CAPLUS' ENTERED AT 09:13:09 ON 28 JAN 1999

L4 FILE 'STNGUIDE' ENTERED AT 09:13:10 ON 28 JAN 1999
0 SEA NANO-ELECTRODE# OR NANOSENSOR# OR MICROELECTRODE#

L5 FILE 'CAPLUS' ENTERED AT 09:18:14 ON 28 JAN 1999
9424 SEA NANO-ELECTRODE# OR NANOSENSOR# OR MICROELECTRODE#

L6 69 SEA L5 (2A) (SHAPE# OR STRUCTURE# OR CONFORM? OR COMPLEMENT?
OR BIND?)

L7 68 SEA L6 NOT L3

FILE 'STNGUIDE' ENTERED AT 09:19:44 ON 28 JAN 1999

FILE 'CAPLUS' ENTERED AT 09:20:42 ON 28 JAN 1999

L8 FILE 'STNGUIDE' ENTERED AT 09:20:42 ON 28 JAN 1999
0 SEA L5 AND (MOLECULE# OR PROTEIN# OR DNA OR RNA OR NUCLEIC)

L9 FILE 'CAPLUS' ENTERED AT 09:21:22 ON 28 JAN 1999
391 SEA L5 AND (MOLECULE# OR PROTEIN# OR DNA OR RNA OR NUCLEIC)

FILE 'STNGUIDE' ENTERED AT 09:22:18 ON 28 JAN 1999

FILE 'CAPLUS' ENTERED AT 09:22:50 ON 28 JAN 1999

FILE 'STNGUIDE' ENTERED AT 09:22:51 ON 28 JAN 1999

=> d his full

(FILE 'HOME' ENTERED AT 14:47:17 ON 28 JAN 1999)

L1 FILE 'WPIDS' ENTERED AT 14:47:20 ON 28 JAN 1999
1 SEA (NANO-ELECTRODE# OR NANOSENSOR#)

L2 FILE 'JAPIO' ENTERED AT 14:47:51 ON 28 JAN 1999
0 SEA (NANO-ELECTRODE# OR NANOSENSOR#)

L3 2272 SEA (ELECTRODE# (2A) (SHAPE OR BIND? OR COMPLEMENT?))

L4 2 SEA L3 AND (DNA OR RNA OR NUCLEIC OR PROTEIN#)

L5 FILE 'WPIDS' ENTERED AT 14:49:13 ON 28 JAN 1999
9 SEA L3 AND (DNA OR RNA OR NUCLEIC OR PROTEIN#)

FILE 'STNGUIDE' ENTERED AT 14:50:31 ON 28 JAN 1999

FILE 'WPIDS' ENTERED AT 14:50:54 ON 28 JAN 1999

L6 FILE 'STNGUIDE' ENTERED AT 14:50:57 ON 28 JAN 1999
0 SEA NANOSCALE ELECTRODE#

L7 FILE 'JAPIO' ENTERED AT 14:52:01 ON 28 JAN 1999
0 SEA NANOSCALE ELECTRODE#

L8 3 SEA ELECTRODE (2A) NANO?

L9 FILE 'WPIDS' ENTERED AT 14:52:36 ON 28 JAN 1999
26 SEA ELECTRODE (2A) NANO?

FILE 'STNGUIDE' ENTERED AT 14:53:52 ON 28 JAN 1999

FILE 'WPIDS' ENTERED AT 14:54:00 ON 28 JAN 1999

FILE 'STNGUIDE' ENTERED AT 14:54:07 ON 28 JAN 1999

FILE 'WPIDS' ENTERED AT 14:55:18 ON 28 JAN 1999

FILE 'STNGUIDE' ENTERED AT 14:55:20 ON 28 JAN 1999

L10 FILE 'JAPIO' ENTERED AT 14:55:47 ON 28 JAN 1999
3 SEA ELECTRODE (2A) NANO?

L11 FILE 'CAPLUS' ENTERED AT 14:56:04 ON 28 JAN 1999
232 SEA ELECTRODE (2A) NANO?

FILE 'STNGUIDE' ENTERED AT 14:56:47 ON 28 JAN 1999

FILE 'CAPLUS' ENTERED AT 14:57:34 ON 28 JAN 1999

FILE 'STNGUIDE' ENTERED AT 14:57:40 ON 28 JAN 1999

L9 ANSWER 1 OF 26 WPIDS COPYRIGHT 1999 DERWENT INFORMATION LTD
 AN 98-388280 [33] WPIDS
 DNN N98-302689 DNC C98-117604
 TI Miniaturised device for detecting analyte based on impedance measurements
 - between electrodes spaced few nanometres apart, provides high
 sensitivity and specificity in assays of, e.g. antigens for diagnosis of
 infectious disease.
 DC B04 D16 J04 S03
 IN CLERC, J F; MASSIT, C; CLERC, J
 PA (COMS) COMMISSARIAT ENERGIE ATOMIQUE
 CYC 19
 PI WO 9829740 A1 980709 (9833)* FR 35 pp G01N027-327
 RW: AT BE CH DE DK ES FI FR GB GR IE IT LU MC NL PT SE
 W: JP US
 FR 2757949 A1 980703 (9833) G01N027-02
 ADT WO 9829740 A1 WO 97-FR2440 971229; FR 2757949 A1 FR 96-16201 961230
 PRAI FR 96-16201 961230
 IC ICM G01N027-02; G01N027-327
 ICS G01N033-483; G01N033-543; H05K003-06
 AB WO 9829740 A UPAB: 980819
 Device for detecting an analyte (I) comprises: (i) an insulating support
 (1), coated with a first conductor (3), forming a first electrode, and
 with second conductor (5) supporting several conducting elements (7) that
 extend above (3) to form a second, coplanar electrode positioned at a
 distance, d, from (3), and (ii) a system (13, 15) for polarising the
 conductors.
 USE - The microdevice is particularly used for biological analysis,
 e.g. clinically, in agriculture and for environmental monitoring,
 particularly for in vitro detection of infectious agents (human immune
 deficiency virus or mycobacteria). Generally (I) is an antigen, antibody,
 hapten, peptide, nucleic acid, enzyme or enzyme substrate.
 ADVANTAGE - Compared with known systems, this device has a much
 smaller distance between electrodes, so sensitivity is improved. Also
 size is reduced, response is rapid and since electrode area is high, the
 signal to noise ratio is increased. Several devices of the same type can be
 mounted on the same chip to increase specificity (no interference from
 local contaminants, or non-specific binding), while miniaturisation
 reduces costs.
 Dwg.1/17
 FS CPI EPI
 FA AB; GI; DCN
 MC CPI: B04-B04C; B04-C01; B04-E01; B04-F10B2; B04-F11; B04-L01; B04-N04;
 B11-C08B; B12-K04A; D05-H09; J04-B01
 EPI: S03-E03C; S03-E14H4

L9 ANSWER 4 OF 26 WPIDS COPYRIGHT 1999 DERWENT INFORMATION LTD
 AN 97-386034 [36] WPIDS
 DNN N97-321348 DNC C97-123949
 TI Ultra micro nanometre electrode and ultra micro
 sensor.
 DC J04 S03
 IN ZHANG, W; ZHANG, X; ZHOU, X
 PA (UYWU-N) UNIV WUHAN
 CYC 1

PI CN 1110786 A 951025 (9736)*
ADT CN 1110786 A CN 94-104755 940429
PRAI CN 94-104755 940429
IC ICM G01N027-30
AB CN 1110786 A UPAB: 970909

G01N027-30

Ion beam etching technique is used to make up electrode with minimal size of 30 nm. The electrode features controllable size, molecule- class surface smoothness and high mechanical strength, so it maybe used for measuring in single cell. A voltol insulating method is disclosed to make up nm-class disk electrode with excellent electrochemical performance.

The

electrode and its supporter are sealed in vacuum to avoid pollution. The nm-class ultramicro pH sensor is made up by chemical trimming of said electrode.

FS CPI EPI
FA AB
MC CPI: J04-C02
EPI: S03-E03

L3 ANSWER 11 OF 138 CAPLUS COPYRIGHT 1999 ACS
 AN 1997:625648 CAPLUS
 DN 127:313737
 TI Detection of **molecules** and **molecule** complexes
 IN Hintsche, Rainer; Paeschke, Manfred
 PA Fraunhofer Gesellschaft Zur Forderung Der Angewandten Forschung E.V.,
 Germany; Hintsche, Rainer; Paeschke, Manfred
 SO PCT Int. Appl., 24 pp.
 CODEN: PIXXD2
 DT Patent
 LA German
 IC ICM G01N027-12
 ICS G01N033-543
 CC 76-2 (Electric Phenomena)
 Section cross-reference(s): 3, 9

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9734140	A1	19970918	WO 97-DE494	19970312
	W: JP, US				
	RW: AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT,				

SE

DE 19610115	A1	19970918	DE 96-19610115	19960314
EP 886773	A1	19981230	EP 97-919270	19970312

R: DE, FR, GB
 PRAI DE 96-19610115 19960314
 WO 97-DE494 19970312

AB A process for detecting mols. or mol. complexes is described in which a measurement probe is brought into contact with an ultra-microelectrode arrangement comprising at least two **electrode structures** configured in such a way that the distances between the different structures lie in the ultra-micro range; an alternating elec. field is created by application of an elec. potential; and the current or potential

fluctuations caused by the species present or created in the measurement probe are measured. The process is esp. useful for detecting large mol. complexes from immunoproteins or DNS mols.

ST detection large mols complexes app

IT Electrochemical sensors

Glass electrodes

Nucleic acid hybridization

(detection of mols. and mol. complexes)

IT **DNA**

RNA

RL: ARU (Analytical role, unclassified); ANST (Analytical study)
 (detection of mols. and mol. complexes)

IT Ceramics

(electrodes; detection of mols. and mol. complexes)

IT Polymers, uses

RL: TEM (Technical or engineered material use); USES (Uses)
 (electrodes; detection of mols. and mol. complexes)

IT 58-85-5D, Biotin, thiol derivs. 5094-33-7, p-Aminophenyl-.beta.-D-galactopyranoside 9013-20-1, Streptavidin

RL: ARU (Analytical role, unclassified); ANST (Analytical study)
 (detection of mols. and mol. complexes)

IT 7439-88-5, Iridium, uses 7440-06-4, Platinum, uses 7440-57-5, Gold, uses 7631-86-9, Silica, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(electrodes; detection of mols. and mol. complexes)

L3 ANSWER 20 OF 138 CAPLUS COPYRIGHT 1999 ACS

AN 1997:40046 CAPLUS

DN 126:141563

TI Modified monolayer electrodes for electrochemical and piezoelectric analysis of substrate-receptor interactions: novel immunosensor electrodes

AU Cohen, Yael; Levi, Shlomo; Rubin, Shai; Willner, Itamar

CS Inst. Chem., Hebrew Univ. Jerusalem, Jerusalem, 91904, Israel

SO J. Electroanal. Chem. (1996), 417(1-2), 65-75

CODEN: JECHES; ISSN: 0368-1874

PB Elsevier

DT Journal

LA English

CC 9-1 (Biochemical Methods)

AB Monolayer-modified Au-electrodes were used to analyze electrochem. host-guest binding interactions of biomaterials. Two configurations to sense the binding of an antibody and a lectin to the complementary substrate monolayer are addressed. In one configuration, a fluorescein monolayer was assembled on an Au-electrode and binding of the complementary anti-fluorescein antibody Flc-Ab was followed by the examn. of electrode insulation by the antibody towards a solubilized

redox

probe, Fe(CN)6³⁻/Fe(CN)6⁴⁻. The extent of electrode insulation is controlled by the Flc-Ab concn. in the sample and the electrode responds amperometrically to Flc-Ab concns. as low as 0.7.μM. The second configuration applies a redox-modified protein to analyze competitively the protein itself. An Au-electrode was modified by an .alpha.-D-mannopyranose monolayer, and a bipyridinium-modified Con

A

was used to analyze Con A (Con. A). Competitive binding of the redox-modified Con. A and the analyzed Con. A to the monolayer-modified electrode occurred, and the amperometric response was inversely proportional to the Con. A concn. Quartz crystals coated with Au-electrodes were applied for the piezoelec. QCM analyses of Flc-Ab and Con. A. The crystal electrodes are modified with a fluorescein antigen monolayer. The Flc-Ab was sensed by the changes in the crystal frequencies as a result of the antibody assocn. to the electrode. Flc-Ab at a concn. as low as 5 ng ml⁻¹ was detected. The series of monosaccharides .alpha.-D-mannopyranose, .beta.-D-glucose or .alpha.-D-glucose was assembled onto the Au-electrodes of the quartz crystals and used as a sensing interface for Con A. The .alpha.-D-mannopyranose monolayer revealed high affinity for the binding of Con. A, whereas the .beta.-D-glucose monolayer showed lower affinity for the protein, and the .alpha.-D-glucose monolayer lacked assocn. to Con. A. The monolayer-modified quartz crystal electrodes revealed specificity for the resp. complementary proteins.

ST monolayer electrode electrochem piezoelec analysis; substrate receptor interaction immunosensor

IT Electrodes

Immunosensors

Proteins (general), analysis

RL: ANT (Analyte); ANST (Analytical study)

(modified monolayer electrodes for electrochem. and piezoelec. anal.

of

substrate-receptor interactions)

IT Antibodies

RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)

(modified monolayer electrodes for electrochem. and piezoelec. anal.

of

substrate-receptor interactions)

IT Lectins
 RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
 (modified monolayer electrodes for electrochem. and piezoelec. anal.
 of substrate-receptor interactions)

IT Crystal structure types
 RL: ANT (Analyte); ANST (Analytical study)
 (quartz; modified monolayer electrodes for electrochem. and piezoelec.
 anal. of substrate-receptor interactions)

IT 2321-07-5, Fluorescein 7296-15-3, .alpha.-D-Mannopyranose 11028-71-0,
 Concanavalin A 13408-62-3 13408-63-4 71990-44-8, Bipyridinium
 RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
 (modified monolayer electrodes for electrochem. and piezoelec. anal.
 of substrate-receptor interactions)

IT 7440-57-5, Gold, uses
 RL: DEV (Device component use); USES (Uses)
 (modified monolayer electrodes for electrochem. and piezoelec. anal.
 of substrate-receptor interactions)

L3 ANSWER 29 OF 138 CAPLUS COPYRIGHT 1999 ACS
 AN 1995:825387 CAPLUS
 DN 123:269179
 TI Influence of the crystallographic **structure** of the
electrode surface on the structure of the electrical double layer
 and adsorption of organic **molecules**

AU Lust, E. J.; Lust, K. K.; Janes, A. A.-J.
 CS Tartu Univ., Tartu, Russia
 SO Russ. J. Electrochem. (Transl. of Elektrokimiya) (1995), 31(8), 807-21
 CODEN: RJELE3; ISSN: 1023-1935
 DT Journal
 LA English
 CC 72-2 (Electrochemistry)
 Section cross-reference(s): 66, 75

AB Results of a systematic investigation on the influence of the crystallog.
 structure of the surface of Bi, Sb, and Cd electrodes on the regularities
 of the structure of the elec. double layer in aq. and nonaq. solns. of
 surface-inactive electrolytes are reported. The way in which
 characteristics of the electrode surface affect the adsorption behavior
 of various org. mols. was studied. General regularities describing the
 effect of the chem. nature and the crystallog. structure of the surface
 on the structure of the elec. double layer and adsorption of org. compds.
 were found.

ST crystallog **structure electrode** surface; elec double
 layer adsorption org mol

IT Electric potential
 (-capacitance; elec. potential vs. capacitance of adsorbed org. mols.
 on metals)

IT Adsorption
 Crystal **structure**
 Electrodes
 (**electrode** surface crystallog. **structure** effect on
 elec. double layer structure and adsorption of org. mols.)

IT Solvent effect
 (solvent effect on elec. double layer structure of metals and
 adsorption of org. mols.)

IT Electric double layer
 (**structure; electrode** surface crystallog.
structure effect on elec. double layer structure and adsorption
 of org. mols.)

IT 7440-36-0, Antimony, properties
 RL: PRP (Properties)

(surface crystallog. structure effect of antimony on elec. double layer structure and adsorption or org. mols.)

IT 7440-69-9, Bismuth, properties
 RL: PRP (Properties)
 (surface crystallog. structure effect of bismuth on elec. double layer structure and adsorption or org. mols.)

IT 7440-43-9, Cadmium, properties
 RL: PRP (Properties)
 (surface crystallog. structure effect of cadmium on elec. double layer structure and adsorption or org. mols.)

L3 ANSWER 30 OF 138 CAPLUS COPYRIGHT 1999 ACS
 AN 1995:646864 CAPLUS
 DN 123:51350
 TI Fabrication and characterization of a nanosensor for admittance spectroscopy of biomolecules
 AU Montelius, Lars; Tegenfeldt, Jonas O.; Ling, Torbjorn G. I.
 CS Dep. of Solid State Physics, Lund Univ., Lund, 22100, Swed.
 SO J. Vac. Sci. Technol., A (1995), 13(3, Pt. 2), 1755-60
 CODEN: JVTAD6; ISSN: 0734-2101
 DT Journal
 LA English
 CC 9-1 (Biochemical Methods)
 AB The authors have fabricated nanometer-sized interdigitated electrode patterns using electron beam lithog. and liftoff techniques. The aim of the investigation was to find out whether the dimensions (i.e., the electrode sepn.) of the pattern would effect the admittance signal of the biomols. in between the electrodes. Since the admittance signal scales with the geometrical factor A/d , where A is the electrode area and d is the sepn., the authors chose to keep A/d const. when changing the electrode sepn. to eliminate this trivial effect on the admittance signal.

An interdigitated **electrode structure** having an **electrode** spacing in the nanometer regime makes it possible to reach high nonstationary as well as stationary elec. field strengths while have a low applied voltage level. Hence, electrode reactions will be as small as possible, while a high signal to noise ratio is obtained. The authors have been able to exptl. study the response of the impedance behavior to high elec. fields exhibiting either a pos. or a neg. shift of the permittivity as a function of the field being a high alternating-current or a direct-current field, resp.

ST fabrication characterization nanosensor admittance spectroscopy biomol
 IT Spectrometry
 (admittance; fabrication and characterization of a nanosensor for admittance spectroscopy of biomols.)

IT Electrodes
 (fabrication and characterization of a nanosensor for admittance spectroscopy of biomols.)

IT **Molecules**
 (biochem., fabrication and characterization of a nanosensor for admittance spectroscopy of biomols.)

L14 ANSWER 1 OF 1 WPIDS COPYRIGHT 1999 DERWENT INFORMATION LTD
 AN 97-458814 [43] WPIDS
 DNN N97-382004
 TI Molecules and molecular complexes detection for biotechnology - involves bringing measurement specimen in contact with ultra-microelectrode arrangement, generating alternating electrical field with electrical potential, measuring current or voltage changes.
 DC S03
 IN HINTSCHE, R; PAESCHKE, M
 PA (FRAU) FRAUNHOFER GES FOERDERUNG ANGEWANDTEN
 CYC 19
 PI DE 19610115 A1 970918 (9743)* 7 pp G01N027-02
 WO 9734140 A1 970918 (9743) G01N027-12 <--
 RW: AT BE CH DE DK ES FI FR GB GR IE IT LU MC NL PT SE
 W: JP US
 ADT DE 19610115 A1 DE 96-19610115 960314; WO 9734140 A1 WO 97-DE494 970312
 PRAI DE 96-19610115 960314
 REP 2.Jnl.Ref ; DE 3228542; EP 299780; US 5491097; WO 9429708
 IC ICM G01N027-02; G01N027-12
 ICS G01N027-327; G01N033-543
 AB DE19610115 A UPAB: 971030
 The method involves bringing a measurement specimen in contact with an ultra-microelectrode arrangement containing at least two electrode structures which are arranged w.r.t. each other so that the distances between the different structures lie in the ultra-micro-range of molecules
 in thin-section molecules.
 An alternating electrical field is generated by applying an electrical potential. The current or potential variations caused in the measurement specimen are measured. Field variations are measured using impedance spectroscopy.
 USE/ADVANTAGE - For measurements in health e.g. biotin, complexes, immunology e.g. haptens. For environment, chemical industry. Enables higher sensitivity detection at relatively low system costs.
 Dwg.2/4
 FS EPI
 FA AB; GI
 M

L2 ANSWER 11 OF 15 CAPLUS COPYRIGHT 1999 ACS
 AN 1998:103629 CAPLUS
 DN 128:186926
 TI Metallic nanowires: conductance statistics, stability, IV curves, and magnetism
 AU Costa-Kramer, J. L.; Garcia, N.; Garcia-Mochales, P.; Marques, M. I.; Serena, P. A.
 CS Laboratorio de Fisica de Sistemas Pequenos y Nanotecnologia, CSIC, Madrid,
 E-28006, Spain
 SO NATO ASI Ser., Ser. E (1997), 340(Nanowires), 171-190
 CODEN: NAESDI; ISSN: 0168-132X
 PB Kluwer Academic Publishers
 DT Journal
 LA English
 CC 76-1 (Electric Phenomena)
 Section cross-reference(s): 77
 AB Conductance quantization (CQ) in three dimensional nanowires is a phenomenon with fundamental and technol. significance, particularly in the area of miniaturized electronic devices. Up to date, even with careful controlled conditions, it was not possible to reproduce exactly the current evolution on breaking a metallic nano contact. This is due to the deformation mechanisms of the nano contact. It was argued that to prove CQ, a statistical study including several conductance expts. has to be performed. However, some criteria was always used to select the conductance curves with which the **nanowire** conductance histogram is built. To prove the quantized nature of the conductance in these nanostructures at room temp. (RT) the authors have performed a statistical study using tens of thousands of consecutive nano contact breaking conductance curves to build the conductance histogram for different metallic junctions. This is at least 100 times more samples than any previous study, and without sample selection. The expt. was performed at RT and ambient conditions in a Scanning Tunneling Microscope (STM), where a tip is crashed repeatedly into the surface, measuring the conductance of the breaking contact and building its histogram in real time. The remarkable reproducibility of the CQ histograms obtained this way allows the study of the effect of applied bias. **electrode** sepn. speed, etc. on the histograms. Notably, clear conductance peaks are obsd. in these massive histograms for Au, Ag, Cu, Na and, Pt nano contacts at RT, with the 1st peak centered always at a slightly lower value than $1 G_0 = 2e^2/h$. The small deviations of the CQ peaks from the value $nG_0 = n2e^2/h$ (corresponding to a perfectly ordered **nanowire**) in these diamagnetic nanowires are attributed to disorder, behaving effectively for Au like a resistance in series with the contact. Exptl. and theor. results supporting this view are presented. The same expt. with ferromagnetic electrodes produces no peaks in the histogram, even though the measured conductance curves exhibit a stepped behavior. This observation is most probably due to the lifting of the spin degeneracy due to the ferromagnetic character of the electrodes. The authors have studied the stability of Au nanocontacts in an Ultra High Vacuum (UHV) environment, finding remarkable stability and using this fact to measure the current-voltage characteristics (IV) with high accuracy. A pos.

nonlinear contribution to the conductance is found in the IV characteristics. This contribution is roughly independent of the quantum conductance channel and its origin is not clear yet.

ST quantization cond metal **nanowire**; magnetism metal
nanowire; copper **nanowire** quantization cond; silver
nanowire quantization cond; sodium **nanowire** quantization
cond; gold **nanowire** quantization cond

IT Wire
(**nanowire**; quantization of cond. and magnetism in metal
nanowires)

IT Nanostructures
(nanowires; quantization of cond. and magnetism in metal nanowires)

IT Electric conductivity
Magnetism
Quantization
(quantization of cond. and magnetism in metal nanowires)

IT Metals, properties
RL: PEP (Physical, engineering or chemical process); PRP (Properties);

TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(quantization of cond. and magnetism in metal nanowires)

IT 7440-22-4, Silver, properties 7440-23-5, Sodium, properties
7440-50-8,
Copper, properties 7440-57-5, Gold, properties
RL: PEP (Physical, engineering or chemical process); PRP (Properties);

TEM (Technical or engineered material use); PROC (Process); USES (Uses)

L3 ANSWER 3000 OF 6614 CAPLUS COPYRIGHT 1999 ACS
 AN 1995:379715 CAPLUS
 DN 122:155498
 TI Improved methods for structural studies of **proteins** using
 nuclear magnetic resonance spectroscopy
 AU Clowes, Robin T.; Crawford, Arthur; Raine, Andrew R. C.; Smith, Brian O.;
 Laue, Ernest D.
 CS Univ. Cambridge, Cambridge, UK
 SO Curr. Opin. Biotechnol. (1995), 6(1), 81-8
 CODEN: CUOBE3; ISSN: 0958-1669
 DT Journal
 LA English
 CC 9-5 (Biochemical Methods)
 AB The past few years have seen the development of three- and
 four-dimensional heteronuclear **NMR** methods. Increased
 sophistication in labeling strategies, use of pulse-field gradients and
 the application of these methods at higher magnetic fields has, in
 combination with improved software, allowed studies of the structure,
 interactions and dynamics of significantly larger **proteins** (now
 up to .apprx.270 amino acid residues).
 ST **conformation protein NMR spectroscopy**
 IT **Conformation** and Conformers
 Nuclear magnetic resonance spectrometry
 (improved methods for structural studies of **proteins** using
NMR spectroscopy)
 IT **Proteins**, properties
 RL: PRP (Properties)
 (improved methods for structural studies of **proteins** using
NMR spectroscopy)